



[Redacted]
Project Manager

May 19, 2010

Mr. Drew Lausch (3HS12)
Site Assessment Manager
U.S. Environmental Protection Agency Region 3
1650 Arch Street
Philadelphia, Pennsylvania 19103

**Subject: Final Lead Smelter Sampling Trip Report
North American Smelting Site
Intersection of Edgemont and East Tioga Streets
Philadelphia, Pennsylvania
EPA Contract No. EP-S3-05-02
TDD No. E43-030-09-09-002
DTN: 0994**

Dear Mr. Lausch:

Tetra Tech EM Inc. (Tetra Tech) is submitting the final trip report for the North American Smelting site. As discussed in the trip report, some lead levels detected in soils sampled by Tetra Tech exceeded the residential, and in some cases, industrial regional screening levels established for lead. Based on these results, Tetra Tech recommends that residents in the vicinity where the samples were collected be contacted regarding the potential risks associated with exposure to elevated levels of lead.

If you have any questions regarding the final report, please contact me at (215) 364-2148.

Sincerely,

[Redacted Signature]

Project Manager

Enclosure

cc: TDD File

**FINAL TRIP REPORT FOR THE
NORTH AMERICAN SMELTING SITE
SOIL SAMPLING EVENT
PHILADELPHIA, PENNSYLVANIA**

Prepared for

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Prepared by

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EPA Contract No. EP-S3-05-02

Technical Direction Document No. E43-030-09-09-002
Document Tracking No. 0994

May 19, 2010

Prepared by

Approved by

A large black rectangular redaction box covering the signatures of the Project Manager and START Site Assessment Manager.

Project Manager

START Site Assessment Manager

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1.0 INTRODUCTION

Under Eastern Area Superfund Technical Assessment and Response Team (START) Contract No. EP-S3-05-02, Technical Direction Document (TDD) No. E43-030-09-09-002, U.S. Environmental Protection Agency (EPA) Region 3 tasked Tetra Tech EM Inc. (Tetra Tech), to conduct a site inspection (SI) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in support of site assessment activities conducted at the North American Smelting site located at the intersection of Edgemont Street and East Tioga Street in Philadelphia, Pennsylvania 19134. The data collected during the SI will be used to determine the need for additional assessment or response activities at the site or in the surrounding area.

This trip report provides site background information in Section 2.0, describes investigation activities in Section 3.0 and summarizes the analytical data and provides conclusions in Section 4.0. All references cited in this report are listed in Section 5.0. All figures are included in Appendix A and a copy of the logbook documentation is provided in Appendix B.

2.0 SITE BACKGROUND

Former potential lead smelter sites nationwide were identified in an April 2001 article published in the American Journal of Public Health by Eckel, and others (Eckel study) (Reference [Ref.] 1). The majority of these former potential lead smelters operated prior to 1964 and closed before the current environmental regulations were instituted. As part of the Eckel study, soil samples were collected from several of the identified former lead smelter properties. Results from the analysis of these soil samples indicated that concentrations of lead exceeded EPA's soil screening level for lead in residential soils. The results of the Eckel study indicate that the air disposition of lead into soils from former smelter operations may present an ongoing public health concern due to exposure of residential populations, especially children to soils containing elevated concentrations of lead (Refs. 1, 2, and 3). One of the sites identified in the Eckel study was the North American Smelting site formerly located the intersection of Edgemont Street and East Tioga Street in Philadelphia, Pennsylvania. Each former smelter property was given a number in Eckel's study. The Eckel study number for this site is 64 (Ref. 1).

The geographic coordinates of the former North American Smelting facility are 39.9895° north latitude and 75.0846° west longitude on the Philadelphia and Camden, Pennsylvania – New Jersey Quadrangle, 7.5 minute series, United States Geological Survey topographic map (see Appendix A, Figure 1).

Tetra Tech completed a windshield reconnaissance of the site and surrounding area on December 16, 2005. A large warehouse structure appeared to encompass the entire former smelter site. As a result of the former smelter site being completely developed with a structure, potential soil sample collection locations were not identified. The property is located in a mixed land use area with residential properties interspersed with small commercial type structures. Based on the close proximity to the former smelter site, Tetra Tech recommended a soil sampling event be conducted at the adjacent residential properties.

3.0 INVESTIGATION ACTIVITIES

On January 21, 2010, Tetra Tech collected in situ and ex situ soil samples from three residential properties situated within close proximity to the smelter. The samples were analyzed for lead concentration using a Niton model XLt portable x-ray fluorescence (XRF) analyzer, calibrated to analyze bulk soil samples using a cadmium₁₀₉ radioactive source. XRF analysis was performed in accordance with EPA Emergency Response Team (ERT) Standard Operating Procedure (SOP) No. 1707, “X-MET 880 Field Portable X-Ray Fluorescence Operating Procedures” (Ref. 5).

Tetra Tech collected in situ soil samples from three randomly selected locations from the rear yard of [REDACTED] Edgemont Street, three randomly selected locations from the rear yard of [REDACTED] Edgemont Street, and seven randomly selected locations from the rear and side yards of [REDACTED] East Thompson Street (see Appendix B, Logbook Documentation). All locations were residential properties. The in situ lead concentrations recorded ranged from 158.9 parts per million (ppm) to 848.3 ppm. To confirm the results of the in situ readings, Tetra Tech collected soil from six locations for ex situ XRF analysis. The samples were collected from 0 to 6 inches below the ground surface. Each sample was placed in a plastic bag and transported to the Tetra Tech Boothwyn office for XRF sample preparation and analysis.

The ex situ sample preparation steps included:

- Placing a 50-gram aliquot of homogenized soil in a labeled baking cup
- Placing baking cup in oven for 2 hours at 350° F
- Screening the dried, 50-gram sample through a #10 mesh sieve (60 micron)
- Placing sieved sample in labeled XRF analysis cup
- Placing clean paper over sample in cup, place cotton ball over paper, and snap on the sample cup cover

Each XRF sample cup was placed into the portable XRF for analysis. Table 1 below summarizes the results, the sample locations are provided in Appendix A, Figure 3.

TABLE 1
XRF ANALYTICAL RESULTS SUMMARY

Sample ID	Location	Analyte	Result (ppm)
NAS-01	Northwest portion of [REDACTED] Edgemont Street's rear yard.	Lead	809.4
NAS-02	East side of [REDACTED] Edgemont Street's rear yard.	Lead	883.0
NAS-03	Northwest portion of [REDACTED] East Thompson Street's rear yard.	Lead	542.6
NAS-04	East side of [REDACTED] East Thompson Street's side yard.	Lead	306.8
NAS-05	East side of [REDACTED] East Thompson Street's side yard.	Lead	536.9
NAS-06	East side of [REDACTED] East Thompson Street's side yard.	Lead	368.7

Notes:

ppm = parts per million

XRF = X-Ray Fluorescence

4.0 ANALYTICAL RESULTS SUMMARY AND CONCLUSIONS

EPA has established a regional screening level (RSL) for lead in residential soils (400 ppm) and industrial soils (800 ppm) (Ref. 6). The RSL can be used as a guidance level to identify sites that may pose potential risk and warrant additional assessment. The RSL established for residential soil of 400 ppm is a risk-based concentration calculated for a bare soil child's play area and the level established for industrial soil is the risk-based concentration for a non-play area (Ref. 7). In addition, EPA and the City of Philadelphia have determined that 800 ppm of lead is considered

an appropriate background level for lead in soils within the City of Philadelphia. As shown in Table 1, the lead concentrations recorded for four of the six ex situ samples (NAS-01, NAS-02, NAS-03 and NAS-05) collected in the vicinity of the former North American Smelting site exceed the residential soil (play area) RSL. Lead concentrations recorded for two of these ex situ samples (NAS-01 and NAS-02) exceed the industrial soil (non-play area) RSL and the accepted City of Philadelphia's background lead level, with a maximum concentration detected of 883.0 ppm. Lead concentrations recorded for ex situ samples NAS-04 and NAS-06 were below the residential and industrial soil RSLs and City of Philadelphia's background lead level. The ex situ analytical results confirmed the results obtained during the in situ sampling, which indicated a maximum lead concentration in the vicinity of the former North American Smelting site of 848.3 ppm.

5.0 REFERENCES

1. Eckel, W.P., Rabinowitz, M.B., Foster, G.D. American Journal of Public Health. "Discovering Unrecognized Lead-Smelting Sites by Historical Methods". April 2001.
2. Pennsylvania Department of Health. Suspected Former Lead Smelter Sites: A Potential Risk Factor for Childhood Lead Poisoning. August 2004.
3. U.S. Environmental Protection Agency (EPA). Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. OSWER Directive 9355.4-12. July 14, 1994.
4. U.S. EPA. Comprehensive Environmental Response, Compensation, and Liability Act Information System (CERCLIS) database. On-Line Address: <http://cfpub.epa.gov/supercpad/cursites/srchsites.cfm>
5. EPA. SOP 1707. "X-MET 880 Field Portable X-Ray Fluorescence Operating Procedures." ERT. Edison. December 1994.
6. EPA. Regional Screening Level Table Master April 2009. May 19, 2009. Available at: http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/pdf/master_sl_table_run_April2009.pdf
7. Agency for Toxic Substances & Disease Registry. Case Studies in Environmental Medicine (CSEM). "Lead Toxicity, What are the U.S. Standards for Lead Levels?". Available at: www.atsdr.cdc.gov/csem/lead/pb_standards2.html

APPENDIX A
FIGURES

APPENDIX B
LOGBOOK DOCUMENTATION